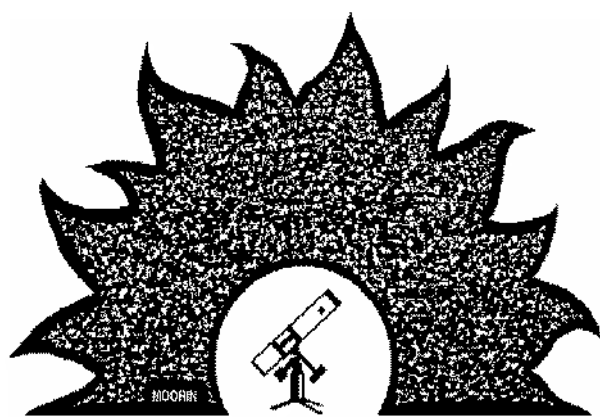




PAStimes

Phoenix Astronomical Society
www.pasaz.org

September 2014
Volume 66 Issue 1

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

September 4 PAS Meeting

By Terri, Event Coordinator

The September PAS Meeting will open up at 7:30 (set up at 7pm) with congratulations to the new PAS Officers. At this time, Rodney will be given his "Host" PAS Position Badge. The position of "Meeting Host" is an Officer Position, Congratulations Rodney!

Our first Member Presentation of the night will be from Leah Sapir. Leah writes: On Thursday Sept 4, I'll be talking about Williamina Fleming (45 minutes) and Professor Edward Charles Pickering (45 min-

utes). It's the story of how a young woman - a "single parent" with no means of support - changed the history of astronomy; and the Harvard professor who made it possible. First I'll tell Williamina's story, then we'll have a short break for any Q&A, and then I'll talk about Professor Pickering. I had started to give this talk at the MOM in May, but we had technical difficulties; so this time I hope I will be able to complete the fascinating story of Williamina and the Professor.

Alex Vrenios will be our next presentation of the evening: "At Long Lat!" (15 minutes) Build a stellar/solar angle measuring instrument from two dowel rods and a 2x4 to find the elevation of Polaris on a clear night and the Sun at Local Noon the next clear day to calculate your Latitude and Longitude.

We hope you will join us for this awesome Meeting. Bring a snack to share, and water will be provided by President Bruce. §

September 11 PAS Meeting of the Minds

By Terri, Event Coordinator

The September Meeting of the Minds (MOM's) will open up at 7pm (set up at 6:30pm). Don't be late! We will begin with Congratulations to Eric. PS: All Meeting of the Minds will begin at 7pm, if at all possible, to allow for many interesting things to occur at these meetings.

We will then cover any topics listed in the Meeting of the Minds Agenda. Please be sure to review the list, go to the provided links to read more about that topic, and come prepared to discuss the Agenda items. Here is the link to the MOM's Agenda: <http://www.pasaz.org/forums/downloads.php?do=file&id=60>

We have an exciting presentation lined

up for you by Alex Vrenios: "How High is the Moon?" (30 minutes) Given a photo of a lunar feature and the exact time it was taken, use an online Moon Ephemeris to determine the data necessary to calculate its height.

Following Alex's presentation, we are planning to have a video from YouTube (about 1 hour) "The Science of Doctor Who." Now, before you say this is science-fiction, the guest speaker of this presentation is a well known astrophysicist who is talking about how and if, what Doctor Who can do, is possible. His visuals, to show his point, are very interesting. You won't want to miss this presentation. I wish I could get

this Brian Cox for a guest speaker for PAS. He is awesome! §



This is the pin you win when you have searched for, found, identified and logged all of the Herschel 400 objects. Come to the PAS Meeting of the Minds to find out who the current recipient of this awesome pin is. Help us congratulate him!

Construction Update Black Mountain Campus

By Loretta Mondragon, PVCC BMC

Terri, We received an updated timeline for our construction. It looks like we will be able to do the Sept 18 & Oct 23 dates for Star Parties. But we won't be able to do

parties for November, December and possibly January (2015). I'll need to confirm the construction schedule for Feb/March/April to make sure the parking area will be us-

able. I believe it will be, but I will ask at our next meeting. §

<u>President / Librarian</u>	Bruce Wurst	602-971-3555	President@pasaz.org
<u>Vice President / Events Coordinator</u>	Terri Finch	602-561-5398	VicePresident@pasaz.org
<u>Treasurer</u>	Mike Marron	480-488-3031	Treasurer@pasaz.org
<u>Newsletter Editor</u>	Don K. Boyd	480-963-7189	Editor@pasaz.org
<u>PAS Host</u>	Rodney Fong	602-432-4318	
<u>Member-At-Large</u>	Alfred P. Fantegrossi	603-548-8353	alfantegrossi@comcast.net
<u>Member-At-Large</u>	Jenny Weitz	602-787-6818	jennifer.weitz@paradisevalley.edu
<u>Webmaster</u>	Chris Johnson		Webmaster@pasaz.org
<u>Rocketry Liaison</u>	Jerry Belcher	623-328-9290	http://ahpra.org/launches.html

Upcoming September Events

By Terri, Event Coordinator

Events@pasaz.org

Sept 4: PAS Meeting in Room LS-205, Doors open at 7pm, Meeting starts at 7:30pm. Member's Night. Read about this meeting on page 1 of this issue. Everyone welcome. Bottled water provided by President Bruce. Bring a snack to share.

Sept 6: International Observe the Moon Night in Carefree. Open to the public with a star party. Potluck at 6:30pm, Sunset at 6:45pm, Dark is 7:45pm. Observing will begin about 8pm. Parking is limited so arrive before dark. RSVP is with Terri for Map and Directions. Sign up in Perfect Potluck with main dish & drink you wish to share.

Sept 7: Free Telescope Workshop at Bookmans 19th Ave and Northern in Phoenix, 3:30pm to 5:30pm. RSVP is required with Terri. When you RSVP, email the Make & Model of the telescope you need assistance with. We also assist with sugges-

tions & advice on what telescope to purchase to do what you wish to do with it.

Sept 9: Private event. RSVP is currently Closed.

Sept 10: Private event at CTCA. RSVP is with Joe.

Sept 11: PAS Meeting of the Minds (Business Meeting) in Room LS 205. Doors open 6:40pm, Meeting is from 7pm to 10pm. Read about this event in this issue. Everyone welcome. Bring a snack to share. Bottled water provided by President Bruce.

Sept 18: Huge Public Star Party at Black Mountain Campus of PVCC 60th Street and Carefree Hwy from 7pm to 10pm. Set up is 6pm for telescope. Everyone welcome. RSVP is requested with Terri. Weather Permitting. When you RSVP by email, please include the number in your party.

Sept 20: Private event in Carefree -

Night Sky Training Session for PAS Members only. Potluck is at 5pm. NSTS starts about 6:30pm and goes until we are done. RSVP is required with Terri.

Sept 24: Private event at CTCA. Back up date.

Sept 25: Free Telescope Workshop at PVCC Main campus 32nd Street and Union Hills Rd 7pm to 10pm with Public Star Party. When you RSVP, include the Make & Model of telescope you need help with, and/or sign up for the Star Party portion of this event. RSVP is required with Terri.

Sept 26: Private School event in Surprise.

Oct 1: PAS Meeting in Room LS-205, Doors open at 7pm, Meeting starts at 7:30pm. Read about the Guest Speaker on page 1 in this issue. Everyone welcome. Bottled water provided by President Bruce. Bring a snack to share. §

Congrats to Eric Steinberg!

By Terri, Event Coordinator & V.P.

Congratulations to Eric for completing the Herschel 400 Observing List. We will be celebrating with him at the September Meeting of the Minds on Sept 11th. The award has been requested from the Astronomical League and should arrive in time. Be sure to attend and help us Congratulate Eric for an amazing amount of Observing Skill! See you there! ***

Astronomy Day in Carefree May 10

By Rodney Fong, PAS Member

It was a challenging Astronomy Day event at Mike's, dealing with persistent gusting wind. In attendance were Sam Inzana, Eric & Ora Steinberg, Mike Marron,

Bob Senzer, Kevin Harcey, Terry Dancer and I. We had nice views of Jupiter, Mars, Saturn and the Moon which dominated the night sky. Terry was able to pull in some

double stars and clusters, but faint nebulae were washed out by the glaring Moon. Otherwise, it was a pleasant night at Mike's.

Astronomy Business For Sale

Successful small business, astronomy-related manufacturing, currently doing business in Northern Arizona. Popular astronomy brand with great reputation and strong international sales. Please call for more information. (702) 823-8087 ask for Robert. ***

2014/2015 PAS Officers

By Terri, Event Coordinator

Here are the results of the 2014 Officer Elections held during the 2014 PAS Awards Ceremony on Apr 24: Bruce Wurst is President, Terri Finch is Vice President, Don Boyd is Editor, & Mike Marron is Treasurer. Our previous Host hasn't been to many meetings, so we voted him out and elected Rodney Fong as our new Host! Congratula-

tions Rodney! We also have 2 Members at Large, one of which has had a 2 year term (as of last year) and the other had a 1 year term. We set it up that way because one of the members had certain restrictions, hence the 1 year term. Since his term ended and he wasn't in attendance to retain it, we voted in a new Member at Large. Now we have Jenny

Weitz, with 1 more year in her term, and Alfred Fantegrossi as the new Member At Large, serving the full 2 years. Congratulations Alfred! Many thanks to everyone who helped with the voting of the 2014/2015 PAS Officers. All the new officers start their term at the September PAS Meeting. Come congratulate the new officers at this meeting.§

Fireworks in Carefree July 3

By Terri, Event Coordinator

It was a humid day and hot. Our potluck started at 6:30pm with a nice collection of foods to enjoy. In attendance at this Public Event from PAS were: William & Terri Finch, Howard Moneta, Rodney Fong, Bob Senzer with his friend Eric H., Sam & Frank Insana, Kevin Witts and his girlfriend Tracey, Don Boyd, Mike Marron, Eric & Ora Steinberg and Mike's friend Joe Aguilera. The majority of the attending folk were there when we got there though Peter Turner arrived after the Fireworks ended and Ora a little later yet. Leah Sapir had called to say she was on the way and wanted to know what to pick up for snacks/treats, but the dust storm stopped her from driving, so, she never made it.

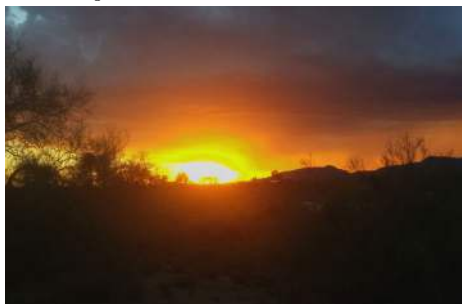
The potluck was awesome and filling. There was pulled pork on buns, meatballs, Eric brought his favorite salami and provolone, Sam brought 2 racks of ribs, and several folk brought ice cream for eating during the fireworks.

Then, after dinner, we gathered outside in the observing area of Mike's yard and watched to the North as the storm came in. It was a great show of lightning, and an awesome sunset. While we were watching the storm and talking through the wind that was blowing by, I noticed that the fireworks had started. So, we all quickly grabbed our chairs and drinks, and moved to the driveway. Some of the folk stopped part way through the walk down the driveway and planted themselves there in the driveway road. As we got to the end of the driveway, the fireworks were underway. I got organized, grabbed an ice cream with the intent of finishing it and then photographing the fireworks. Before I got done eating the ice cream, the fireworks had ended. It was timed at about 15 minutes. Why so short you ask? A haboob was overtaking the fireworks. Just as they set off the finale, a smiley face or 2, the haboob was upon

them. So, with that info in mind, we all walked back to the house, put the chairs inside and got out of the strong winds. About ½ hour later, it started to rain. Now, this isn't normal rain. This is the normal for Monsoon rain in which you get dust on your car and the you get spit on by the clouds making mud on your car. The rain never got the ground very wet, if at all. It dried on contact.

At that point, we started a movie which didn't interest some of us, so we gathered in the kitchen and chatted for a couple hours. When the movie ended, those in the living room came to the kitchen and some of those in the kitchen said goodnight and left. That was about 11pm. At that point it was still raining lightly, so, with only Don, William, Mike and me left, we moved to the porch and enjoyed the cooler breeze - it was muggy but wasn't too hot, with occasional drips from the rain. After an hour or so, we went indoors and the plan was that we would depart, but it took another hour to get out the door. Friends have a lot to share, so William and I got home about 2:30am.

It was a very good potluck & party. The fireworks were too short but the sunset and lightning show was extremely awesome. Our PAS members are the best! They are terrific to be around, chat with and enjoy! Looking forward to the next event at Mike's.§



A Glowing Sunset taken by Eric Steinberg.



Howard Moneta at the party. Photo by Terri.



Mike Marron at his party, at his home in Carefree. Photo by Terri.



Rodney Fong at the July 3rd Fireworks Party at Mike's home in Carefree. Photo by Terri.

Mike's Lecture #1 June 14

by Alex Vrenios

I arrived early for the potluck dinner, feasting on pizza, chicken nuggets, frozen shrimp (shrimpsicles, someone called them) and other delightful treats. By 7pm everyone who was expected to arrive was there so we started the main event.

Mike's summer lecture series started off with a bang, you might say. Lecture #1, "The Electromagnetic Universe," began with an explanation of the true nature of light which he generalized into (1) everything that is anything, is comprised of tiny packets of matter called quanta, and (2) nothing can't exist anywhere because every place in the Universe contains energy: the background radiation we believe to be a residual effect of the Big Bang warms everything to at least 2.7 degrees Kelvin, so nothing in the Universe is colder than that. Since temperature is the measure of the energy in a substance, there is no place in the Universe that has nothing in it. That was just for starters...

The rest of his talk presented his models of elementary matter, how quarks can be built from neutrinos. Since everything (electrons and other subatomic particles) is built from quarks, all the matter and energy in the Universe – all that there is – can be represented as some combination of circulating rings (strings or springs), tiny packets of energy – quanta – called Planck Particles. At least that's what I think he

said. I'm going to have to attend this lecture at least once more to get my head around these concepts.

Lastly, the July issue of Astronomy magazine had an article about a dozen stellar objects that made for great viewing through binoculars. Two of these objects, one Messier and one NGC, were needed for Astro League observing programs that I'm working on so I brought my binoculars along. When I was reminded that there was a Full Moon that evening, however, I decided to put my binoculars back in the car. As I stepped outside I noticed that the Moon had not yet risen, that the sky was perfect at that moment for what I wanted to do. It took only a few minutes to find and view both objects under Mike's delightfully dark sky!

Terri writes: In attendance at this event, from PAS, were: Mike Marron, the host & Guest Speaker of the event, Paul Facuna, Rodney Fong, William & Terri Finch, Eric Steinberg & Ora Kurland, Don Boyd, Alex Vrenios and Sam Insna for a total of 14 in attendance, including newest PAS members, Peter and his wife. Also attending was a gal we met at Yves' event previously, Julie Hohlman.

The potluck was small this time, with pizza and chicken, mostly. Rodney brought some really interesting little cupcake things that were tasty. Around the end of the pot-

luck, several extra folk arrived for the lecture, Pete, Julie, Eric & Ora. That worked out well since there wasn't that much food left by that time.

We all moved into the living room and Alex set up the recorder. Mike did his lecture which lasted just over 1.5 hours. We had a great time, good discussions and lots of questions so it went rather smoothly. Mike always does a great presentation. His slides were a bit messed up in the order they came up, but he worked around it and it didn't take away from what he was sharing with us.

After the movie, most of the group departed. The few of us who stuck around watched an interesting one-hour long Star Trek spoof that Sam had brought. After the spoof, we had planned to watch a movie Alex brought, but Alex was getting tired and departed, taking the movie with him, so we didn't get to see that one. Maybe next time. I believe it was called "The Dish." I'd like to see it.

When the spoof ended, we moved to the kitchen and chatted some more. Mike was passing out, so we all decided to go home. I believe the party closed up about 11:30pm. Many thanks to everyone who brought food to the potluck and attended this fine Lecture. We look forward to the next Lecture from Mike, happening on July 12. §

Impromptu Viewing Session June 24

By Eric Steinberg

On June 24th, PAS member Eric Steinberg provided a private star party to a visitor to our area. Peter expressed a strong desire to see truly dark skies, so we chose the Cherry Road site near Dewey. Our guest had been on diplomatic postings in places like Seoul and Beijing - capitols of noise, crowding and of course light pollution. Upon arriving, his first comment was: "I've never been in anyplace this remote in my life." He was quite excited watching it get dark and shortly after the first stars appeared, commented that there were already more stars showing than he could normally see in full night. As night fell, we were treated to a stunning evening - black clear skies, stars that felt close enough to

touch and a dramatic Milky Way with lots of visible structure. Since the site is at 4500', the quality of the skies are different than at Antennas - it's not quite as dark, but the transparency and clarity are striking. Needless to say our friend was amazed and extremely appreciative. We viewed: Mars, Saturn, M3, M5, M6, M7, M8, M11, M13, M16, M17, M20, M51, M57, M64, M81, M82, M84, M87, M92, M101, M104, NGC 6543 (Cat's Eye), NGC 6960/6965 (Veil) and NGC 7000 (North American). Several times I heard him say "I can't believe what I'm seeing." Weather was cool and pleasant; only the seeing was sub-par. Thankfully I was able to show Saturn very early while it was still nice and sharp. Overall--

what a treat!

Peter writes: Hi Terri, Last night was great and Eric did an incredible job showing me the sky. The objects he showed me were unbelievable, and he shared lots of good stories and info about the night sky. We had beautiful clear skies, and I got to see the Milky Way for the first time in my life along with over 20 nebulae, galaxies and other objects. I want to come live here and go out to the desert every night now!

Thank you for your help in connecting me with Eric and for your hospitality in inviting me to your events. I really appreciate everything you've done.

Bookmans Space Day June 19

By Terri, Event Coordinator

It was a hot, 106°, slightly breezy day at Bookmans. Set up was 12pm, though most of us arrived a little later. The event was from 1pm to 3pm, but we closed down about 10 minutes early. Many thanks to Katy Spratt for inviting us to do this event during her Kids Space Day event.

In attendance, and very much appreciated at this event, from PAS, were William & Terri Finch with their PST, Don Boyd with his 8" with a solar filter and Alex Vrenios with his 5" and solar filter. About half way through the event, Alex gave up trying to get his scope to cooperate, and he left to go home. Mike Marron was there with his meteorites and as usual, stole the show. Rodney Fong was the Runner for this event and did an awesome job of keeping William hydrated, and supplied with handouts.

Terri did handouts at the PAS Table as well as Q&A. Altogether about 50 handouts were given out in the 2.5 hours we were there, with one new member joining PAS. William had brought the new PAS handout display, which worked out ok, except that slight breezes were trying to take away the handouts from time to time. It was a very hot day to be outdoors, but we did it. We met a lot of very nice people and I gave out about 15 Q&A prizes. We look forward to the next Solar event at Bookmans though nothing is scheduled at this time.

Alex writes: Every other mention of a "moment in the sun" has had at least some small positive side. This day was different. Three members who arrived earlier spotted me driving in the lot and blocked a primo parking spot, saving it for me. (Perhaps that was the small positive note?)

The first thing I realized while setting up was that I left my (fully charged) 12V battery at home. Don said that he had an extra but, upon inspection, found that it was dead. Then, he pointed out, if I had a long enough cord, I could run it off my car battery. (Primo spot, remember?) My DC cord was just long enough, as it turned out, and I was back in business. Or so it seemed.

I placed the mount on the tripod and realized that I hadn't extended the legs yet. In the process, the mount toppled over and landed heavily on my big toe - ouch! After a terse comment I extended the legs, replaced the mount and continued.

The telescope was assembled, now. Don, seeing my difficulty finding the sun in

the finder scope, said it would be easier if I removed the eyepiece completely (minimizing the finder scope's power), to get a very rough alignment - it worked! Having centered the sun now, I realized that I forgot to align the spotting scope with the OTA. To top it all off, William noticed that my tripod was pointing way off North (it doesn't have to be exact, but it should be close), and that one of the legs may have been loosened by the heat and was now much shorter than the other two. And upon closer inspection, he noticed that the dovetail mount wasn't properly attached.

Not one to be humiliated by some electromechanical device, I reset the dove tail mount, fully extended and tightened the tripod legs, got the spotting scope aligned with the OTA, and restarted the auto-alignment process. When I selected the sun as my alignment object, the telescope slewed close to it, but not exactly on it. I removed the eyepiece from the spotting scope, found the sun and got it centered. The scope's eyepiece was very low to the ground and, despite my contortions, aligning it on the sun seemed an impossible task.

By now my toe was throbbing and I felt like I was near sunstroke. All my energy was completely tapped. I extended my apologies, disassembled and loaded everything into the car and headed back home.

I looked up "broken toe" on the Internet and discovered that an abnormally crooked shape or an open wound was a sure indicator that I should seek medical help. That was not the case; It was very painful and stiff, but those were the common symptoms. And by a quantity of Grace that I



PAS Table with PAS Sign on front of table, Rodney on left, Terri behind table, William off to the right. Alex took the photo with my camera.



This photo shows (L to R) Don just beyond the car, then Rodney with his back to us, a Mom and 2 kids, and William with the PST at Bookmans Solar Day event, June 19. Photo by Terri.



At Bookmans, PAS Table, new PAS handout stand, and just beyond the table is Mike with his meteorites and a group of interested people. Photo by Terri Finch.

surely did not deserve, I found a single prescription pain pill, left over from some long forgotten dental work I assume. That, followed by a quart of water and a short nap, brought me back.

The pain was nearly gone now, but the toe was still quite stiff. With my newfound energy I unloaded the car, got both city cans out to the curb, and stopped at the bank and the store. Keeping me in check, however, not letting me assume for a moment that I had in any sense of the word recovered, the letter I intended to mail had no stamp. §

Night Sky Training Session June 28

By Terri, Event Coordinator

It was another hot evening. The potluck was set originally for 6pm, but Eric mentioned that it would be extremely hot outside at that time, so we moved the potluck to 6:30 to be indoors eating during the hot time of the evening. Thank you Eric, for that suggestion - it worked out well.

I must also thank everyone who attended, brought food, and was involved in the potluck. This had to be one of the better selections of food for the past 5+ events at Mike's house - thank you! We had chicken, sides, 2 kinds of pizza, plenty to eat for all! We hope for some more great potlucks like this one, at future Mike's events.

This class, which was a Night Sky Training Session, was on star hopping with focus the visible Messier Objects. The homework was to provide Terri with 3 Messier Objects you'd like to see that night. I wish to thank the 5 PAS Members who contributed to the list. The 2nd part of the homework, which we didn't discuss, but which I'm glad I had everyone do, was bring 5 facts about each of those 3 Messier Objects to share with the group. Observers were also asked to find out if the objects were above the horizon and how far and whether they were East or West of the Zenith - when you sent the data to me, I was able to use it to determine the best observing order. So, the homework was not only so you knew where to find these objects but also to let me know how long we had before they would set for the night. My thanks goes to Alex, Peter, Kevin, Howard and Sam for doing their homework, even though it was at short notice (we'll do better next time). They pass the class with an "A." The rest of the class....

So, attendance at this event were: Mike Marron, the host of the party, William & Terri Finch with 1 scope, Peter & Andie Turner without a scope (just came to learn), Don Boyd with his scope, Rodney Fong with his scope, Howard Moneta for First Light with his new 14" Dob Go-to, Terry Dancer with his scope, his Dad, Terry Dancer Sr, and his friend Chad, Alex Vrenios with his scope, Eric Steinberg & Ora with his scope, Michele and Mark Peterson with their scope, Kevin Witts with his scope and Sam Insana with his scope. Kevin Harcey also attended. That makes 19 in attendance and 10 scopes - a great turnout. We could even have fit in a few more scopes.

So, after we ate and ate and ate, we went outside and set up our scopes. We opened the evening by finding Saturn. Jupiter had already set for the evening, so Saturn was our main focus while we waited for a few people to get their scopes aligned. Howard spent a lot of time on alignment with Eric assisting on and off. Mark and Michele were having difficulty and Don was fighting with his scope as well, so, we delayed a bit longer than we would have like for the start of the class, to give everyone time to catch up.

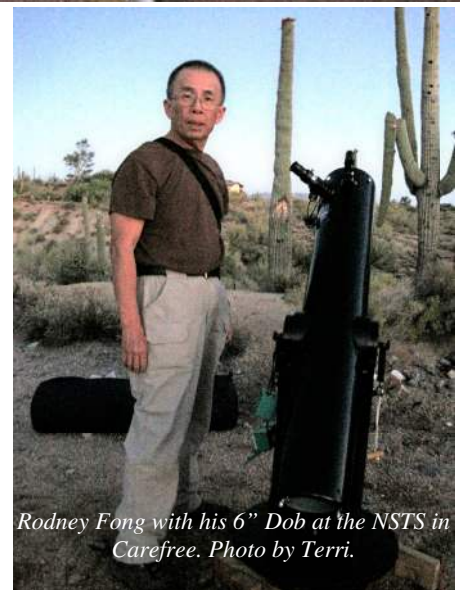
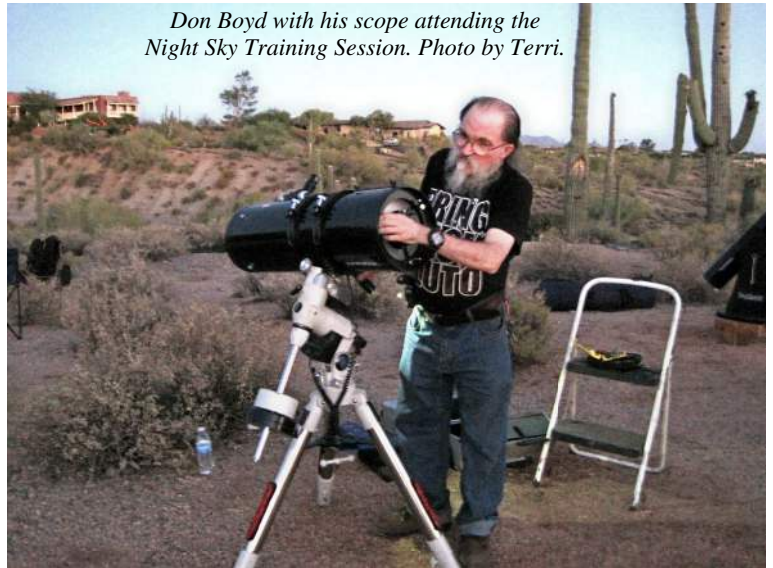
Once everyone, (except Howard) was ready, we started by finding M57. Why? Because Lyra was in just the right position to be able to star hop comfortably for most scopes. So, I did a star hopping laser tour to get to the Ring Nebula. Everyone found it, we did some sharing of scopes, and it was wonderful. From there, some of the Go-to scope owners jumped to other objects and got us off track but the views were worth it. M4 and M5 and M6 were all interesting objects. When 10pm came, it was finally dark enough to enjoy a Sky Tour and many, many thanks go to Eric for such a fine sky tour. Every time he does a sky tour, he tells us a little more than last time, adjusts his stories, and really makes it wonderful to be out, under the stars, sharing the night sky with his tour of the sky. Thank you Eric!

Then, we mostly did a free choice. I was trying to get the class back on track, but several scope operators were happy showing objects, so I just let them do their thing. We had a bunch of objects we were viewing that night. The majority of objects were Messier Objects, but once in a while a Non Messier Object was found. Eric helped us find the Cat's Eye Nebula. We looked at M4 because though it is a globular cluster, it is also labeled as Cat's Eye. Interestingly, in the listserv discussion for the homework, it was discovered by Alex and Leah and a few other members, that there's 4 objects in

the night sky that are called Cat's Eye, but THE Cat's Eye NGC6543 is the one marked as the Cat's Eye Nebula. Whereas the others are clusters, and other types of objects.

I really wish to thank those who brought their scopes and shared the night sky with everyone present. Chad is a friend of Young Terry Dancer and I approved his participation. I think we got him hooked on observing, so we should be hearing back from him as he joins the club and gets himself a telescope of his own. It was great to have so many friends together in one place. And thanks to everyone who shared their views with me. I didn't bring my scope this time, so it was wonderful to see through everyone else's scopes! We look forward to the next Night Sky Training Session (NSTS) on Sept 20. §

Don Boyd with his scope attending the Night Sky Training Session. Photo by Terri.



Rodney Fong with his 6" Dob at the NSTS in Carefree. Photo by Terri.



Droughts, Floods and the Earth's Gravity

By Dr. Ethan Siegel

When you think about gravitation here on Earth, you very likely think about how constant it is, at 9.8 m/s^2 (32 ft/s^2). Only, that's not quite right. Depending on how thick the Earth's crust is, whether you're slightly closer to or farther from the Earth's center, or what the density of the material beneath you is, you'll experience slight variations in Earth's gravity as large as 0.2%, something you'd need to account for if you were a pendulum-clock-maker.

But surprisingly, the amount of *water content* stored on land in the Earth actually changes the gravity field of where you are by a significant, measurable amount. Over land, water is stored in lakes, rivers, aquifers, soil moisture, snow and glaciers. Even a change of just a few centimeters in the water table of an area can be clearly discerned by our best space-borne mission: NASA's twin Gravity Recovery and Climate Experiment (GRACE) satellites.

Since its 2002 launch, GRACE has

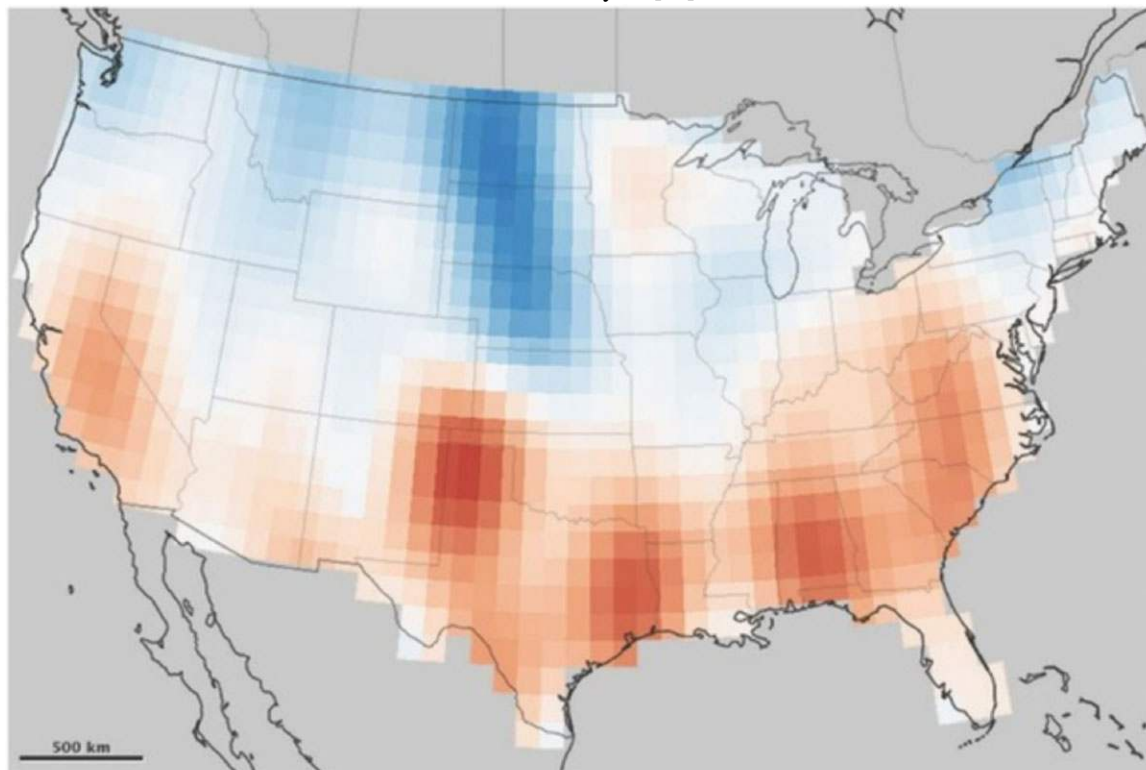
seen the water-table-equivalent of the United States (and the rest of the world) change significantly over that time. Groundwater supplies are vital for agriculture and provide half of the world's drinking water. Yet GRACE has seen California's central valley and the southern high plains rapidly deplete their groundwater reserves, endangering a significant portion of the nation's food supply. Meanwhile, the upper Missouri River Basin—recently home to severe flooding—continues to see its water table rise.

NASA's GRACE satellites are the only pieces of equipment currently capable of making these global, precision measurements, providing our best knowledge for mitigating these terrestrial changes. Thanks to GRACE, we've been able to quantify the water loss of the Colorado River Basin (65 cubic kilometers), add months to the lead-time water managers have for flood prediction, and better predict the impacts of droughts worldwide. As NASA scientist Matthew Rodell says, "[W]ithout GRACE

we would have no routine, global measurements of changes in groundwater availability. Other satellites can't do it, and ground-based monitoring is inadequate." Even though the GRACE satellites are nearing the end of their lives, the GRACE Follow-On satellites will be launched in 2017, providing us with this valuable data far into the future. Although the climate is surely changing, it's water availability, *not* sea level rise, that's the largest near-term danger, and the most important aspect we can work to understand!

Learn more about NASA's GRACE mission here: http://www.nasa.gov/mission_pages/Grace/

Kids can learn all about launching objects into Earth's orbit by shooting a (digital) cannonball on NASA's Space Place website. Check it out at: <http://spaceplace.nasa.gov/how-orbits-work/>



Freshwater Storage Rate of Change 2003–2012 (cm/year)



Image credit: NASA Earth Observatory image by Jesse Allen, using GRACE data provide courtesy of Jay Famigleitti, University of California Irvine and Matthew Rodell, NASA Goddard Space Flight Center. Caption by Holli Riebeck.

A Trip to Griffith Observatory

By Eric Steinberg, PAS Member

Griffith Observatory is a beautiful multi-domed structure that sits on a high bluff in the Hollywood Hills, a sweeping overlook of Greater Los Angeles from El Monte to the Ocean. On Saturday July 5th, PAS members Eric Steinberg and Ora Kurland had the opportunity to spend the day there with their son Seth. Arriving mid-afternoon, we found the manicured grounds already filling with telescopes, many set up for solar viewing (lots of sunspots). Among them were two standouts: First a gorgeous gleaming brass refractor that in fact turned out to be an original Alvan Clark from 1929. We felt like we were looking through history itself to the lunar surface. Secondly, there was a homemade 25" Newtonian on a tracking fork mount. The mirror itself was supposed to be aboard the canceled Skylab II, but was acquired surplus by an enterprising amateur who built the scope around it. Now owned by the observatory, it unfortunately did not have the tracking working - quite a piece of equipment though!

Our day also included two visually stunning planetarium shows in the newly renovated facility. One of them was more astronomy-oriented and therefore quite in-

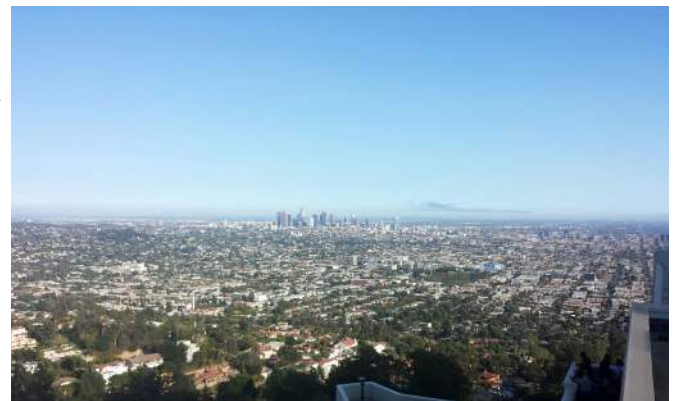
teresting; the other was, well... less so, and included a presenter who sounded like she was speaking to toddlers. Throughout however, the abilities of the new Zeiss projector were spectacularly demonstrated.

After enjoying the panoramic views of the LA area, a nice sunset (ours are better here) and a large number of excellent static exhibits, we waited for darkness.... which never came. I estimate the limiting magnitude there to be about 3, with the panoply of telescopes basically limited to the Moon, Mars and Saturn. Nevertheless it was a lovely cool night and though crowded, felt pleasant and relaxed.

Overall, I recommend the observatory as a must-see for astronomers visiting LA§



Interior of Griffith Observatory. Photo provided by but not taken by Eric Steinberg



The view from Griffith Observatory Roof by Eric Steinberg.

Mike's Lecture #2 July 12

By Terri Finch, Rodney Fong & Alfred Fantegrossi

The food was delicious at this event but Mike told me to be sure to write the review about how his presentation went, rather than how the Food and Friends were - So, I'm going to do both!

The selections at this event were: chicken, fruit, pizza, meatballs, sausages, string beans & corn, rye bread, bagels, Banana Bread muffins, and more. Many thanks to Leah Sapir, who purchased some treats for the July 3 event at Mike's, but was prevented from attending by the dust storm. William and I picked them up on the way to Mike's for this date: "Drumsticks" ice cream & 4 cases of soda pop.

In attendance were only PAS Members: Paul Facuna, Don Boyd, Mike Mar-ron, William & Terri Finch, Bob Senzer, Howard Moneta, Eric & Ora Steinberg, Alex Vrenios, and Alfred Fantegrossi.

After enjoying the food, we moved to the living room to attend the wonderful lecture with Mike as our presenter. Mike

had a video of what happens when a meteor strikes the Earth. This was a very good visual introduction to the lecture, which started about 7:10pm and ended 10:15pm. We did take a half hour break at 9pm to 9:30 in which every one stretched their legs and got snacks, hit the bathroom, etc. A group of us were on the porch enjoying the light rain (Howard, Don, William and I, Bob and Rodney), when a huge Palo Verde Beetle flew up, tapped Howard on the head, flew onto William's arm and caused

us all to "freak". After the excitement, we escaped into the house, but the beetle followed us indoors! We all tried to get it back



Don Boyd, Rodney Fong, Paul Facuna, & Eric Steinberg seated & waiting for Mike's 2 Lecture of the Summer, at Mike's home in Care-free. Photo by Terri Finch.

outdoors - Rodney kicked it out the door, stunning it long enough for Mike to look to see what it was. Mike said (and so does the

(Continued on page 9)

Mike's Lecture #2 July 12

(Continued from page 8)

web) that Palo Verde Beetles eat plants and are harmless, but when that big beetle is flying towards you, it doesn't look very harmless. Eeeeeek! He crashed our party.

Mike's lecture talked first about Population 1 Stars and how things evolved. Mike then went over the various locations of visible craters on the Earth and talked about what size asteroid caused the damage, what kind of damage was done and the results, such as what died, when, how, etc. That's my favorite part of this lecture - most interesting. But this lecture also covered a great deal more info and was very informative and extensive. A well done, organized lecture! When Eric left for the evening, about 10 minutes to the end of the lecture, he sent a text to my phone to thank Mike for "an excellent, if long talk." Long but well worth the time.

So, we continued the last hour or so of the lecture and had a little discussion afterwards about various topics and everyone departed about 11pm. That's early but Mike was looking very tired. He had stayed up till midnight editing his presentation and it was well worth it.

I wish to thank everyone for their fine choices in food and for attending and supporting Mike, and for the great discussion

we had during the presentation, in which Eric asked a bunch of really interesting questions. We look forward to the next Lecture at Mike's.

Rodney writes: Mike's Lecture on July 12 was a real "Eye opener" conveying in great details what a dynamic universe we live in. Excellent presentation. The sky was cloudy with light rain precluding any night observation but the get together at Mike's was enjoyable as always.

Alfred writes: Mike's Summer Lecture Series #2: July 12th Lecture on "Earth Shattering Evolution" highlighted Mike's major interest and research....Asteroids and Meteorites, their geological composition and their effect on the subsequent geologic history of Earth. He is such an interesting and engaging speaker, and kept the audience thinking and interested throughout the presentation. His theories of plate-tectonics and the impact of major asteroid impacts on the shaping of our world were, in my mind, a logical thought process from the simple and separate presentation of facts



Mike Marron, Lecturing on "Earth Shattering Evolution on July 12. Photo by Terri.

we all studied growing up from texts. To put them together as "Cause and Effects", their effects not just on Earth's atmosphere and on its developing life forms, but on its geology and chemistry were very stimulating to hear and consider. I do applaud Mike for sharing all his detailed research with us as well as explaining further his ideas, not just leaving his audience hanging. Kudos! And Well Done! Al Fantegrossi "becoming a believer"

SCAE 2014

by Dick Newell

I attended the 1st annual Southern California Astronomy Expo and Imaging Symposium over the weekend of July 12-13 in Oceanside, CA. This was hosted by Opt, a large telescope and optics store in Oceanside. Saturday's event was the Astronomy Expo - there were vendors there from Lunt, SBIG, FLI, Starlight Xpress, QSI, Celestron, PlaneWave, iOptron, Atik, Paramount, and Coronado, to name a few. The event was well-attended, and I got to talk to most of the vendors that were there.

On Sunday, they held the Imaging Symposium, which was a ticketed event (free) but they did that since the space for the talks was limited. Again, this was an excellent event, with talks from Jim Lafferty on Solar Imaging, Tony Hallas on DSLR Astrophotography, Dr. Craig Stark of PHD Guiding and Nebulosity who spoke about getting good SNR (signal-to-noise ratio), Ken Crawford on Photoshop use in astrophotography, Warren Keller on PixInsight,

and Chris Go on advanced planetary imaging.

I can't recommend this event more highly, especially if you have any aspirations towards astrophotography. Just a reminder, the 2nd annual Southwest Astrophotography seminar (SWAP) will be held in Tucson from Oct 29-31.



The Planets This Month

By Leah Sapir

This month, Mars and Saturn make a nice pair in the west after sunset. They will be closest to each other at the beginning of September (around 5 degrees separation), and will gradually move apart. Mars and Saturn will be setting earlier each day, but they will continue to be hanging around in our evening sky for a while, partly due to the fact that sun sets a little earlier as well. Both planets set around 10 pm at the beginning of September. At the end of the month, Saturn sets at 8 pm, and Mars at 9:30.

Also, during this month Mars will be moving towards Antares: from an 18-degree separation at the beginning of the month, to a close approach of 3 degrees on September 26 through 30. Both Mars and

Antares will be shining at around first magnitude, with Mars just slightly brighter. Antares is the brightest star in the constellation Scorpius. It is a red giant, and its reddish color makes it resemble Mars. In fact, its name means "rival of Mars". So, it will be interesting to see these two reddish objects side by side. (Or at least, that is how they will appear in the sky, even though Mars is only 150 million miles away, while Antares is far in the background, sending its light to us from a distance of 600 light years.)

Mercury is theoretically also an evening star, but it will be barely visible, close to the western horizon in evening twilight.

Neptune is in the east after sunset, and is up all night. Uranus rises at 8:30 pm at the beginning of September, and at 6:30 pm towards the end of the month.

Jupiter is a morning star but is rising earlier, at 4 am at the beginning of September, and 2:30 towards the end of the month. Venus is also a morning star, but rising later. You might be able to catch it close to dawn (around 5 am) at the beginning of September, but after that it will be slipping into the sunrise.

The first quarter moon will be on September 2, full moon on September 9, third quarter on September 16, and new moon on September 24.§

Bookmans Telescope Workshop July 13

By Terri, Event Coordinator

In attendance from PAS at this event were William and Terri Finch, Don Boyd, Rodney Fong, Howard Moneta, & Bob Senzer. Pam Pearson was a public RSVP and brought Steven with his Bushell and Kevin with his Celestron PowerSeeker

127EQ. Don & Rodney did a fantastic job of assisting. Stephen, Howard, Don and I had a great conversation about Doctor Who. After our telescope students left, we had a discussion about the previous night's lecture at Mike's house, in which we talked

about the huge beetle and other things that stood out from the evening, as I was writing the review of that night's event. Many thanks to the attending Telescope Team for attending as a well as helping to get the facts right for Mike's 2nd Lecture review.§

CTCA/PAS SkyTour Event July 23

8pm-10pm mini-report

PAS attendees: Mike Marron, Don Boyd, Joe Collins, Renee Collins

Patient/Caregiver Attendees: 2

We talked with two customers for two hours about meteorites, the cosmos, and astronomy in general. We couldn't see anything in the skies besides airplanes due to overcast conditions and actually had to break down the telescopes due to wind and storm-like conditions approaching us about

an hour before the end of the event.

Mike brought an astronomy presentation with him on a thumb drive, and we were ready to present at 7pm in the café, but we not only did not have an audience, but also did not have a laptop to present on...just a projector. We will have to coordinate this better next time. The CTCA advertising was wrong again, but didn't really misdirect anyone - wrong time and

wrong place was advertised, even though I emailed and phoned Amanda the details twice. I will use business cards next time.

We met a new CancerFighter rep., Laura. She will be working with us and Amanda during the next few months at future events.

Don writes: I got a few sprinkles last night as I was leaving CTCA and it looked like Chandler got some rain.§

Lecture in Carefree July 26

By Terri, Event Coordinator

It was a very nice day to start. The clouds were pretty as we were driving up to Mike's house. At 5pm the Potluck started with pizza, chicken, fruit, and other great things to eat. In attendance were only PAS Members: Rodney Fong, Mike Marron, William & Terri Finch, Bob Senser, Paul Facuna, Don Boyd, Howard Moneta, Kevin Harcey and Alex Vrenios. Mike's Lecture began at 7:15pm and was recorded by Alex

who also brought his spot light. We enjoyed some great information until about 8:45 when we took a break until 9pm. Mike finished the lecture at 10pm. About this same time we heard thunder outside, so we all moved outside to find a massive storm headed our way. We spent about 15 minutes admiring the lightning, but then Mike announced that it looked like the kind of storm that could cause a flash flood and he

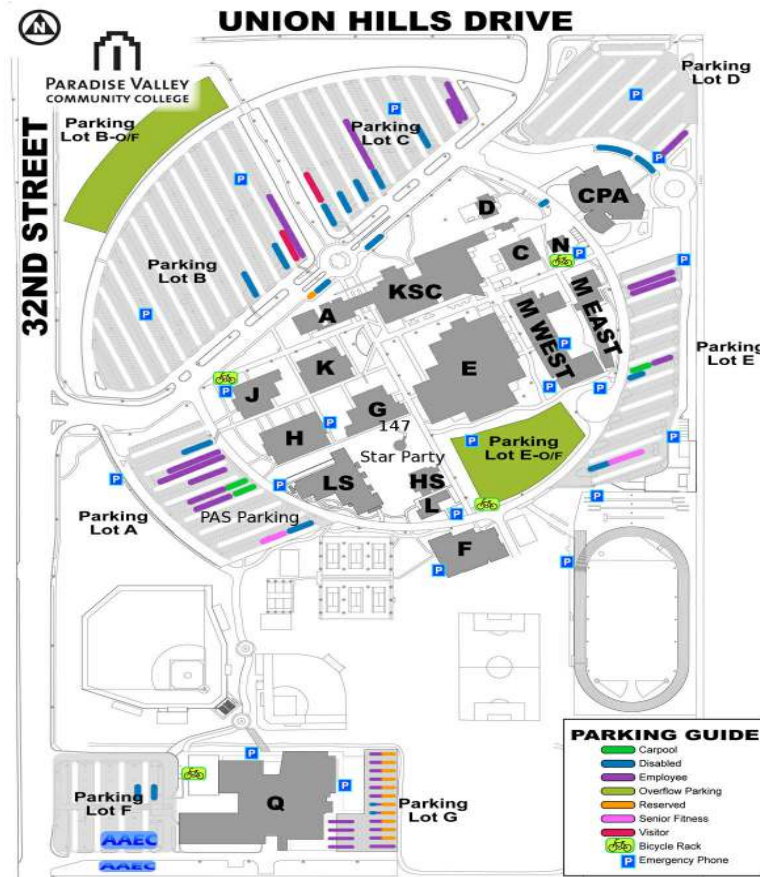
explained that if the rain flooded the washes, no one would get home, so by 10:40pm we had left Mike's house, all making it home before the storm hit Phoenix. Some of us caught great video of the storm. Here's the link to one video done by William Finch: <http://youtu.be/L1oxnK6KzxQ>.

Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032

Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



September 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4 PAS Meeting	5	6 Star Party in Carefree
7 Telescope Workshop	8	9 Private Star Party	10 CTCA (Private)	11 PAS MOM	12	13
14	15	16	17	18 BMC Star Party	19	20 NSTS (Private)
21	22	23	24 CTCA Backup Date	25 Telescope Workshop	26 School Star Party (Private)	27
28	29	30				

Don Boyd
PAStimes Editor
3039 W Peoria Ave 102-188
Phoenix AZ 85029

To:

2013/2014 PAS GUEST SPEAKER LINE-UP

By Terri, Event Coordinator, Events@pasaz.org

Do you have an idea for a Guest Speaker? Email me the details.

Oct 2: Mark Murison: Topic: TBA

Nov 6: David Williams: Topic "Mars: From Mariner to Curiosity & Beyond:
A History of Mars Exploration."

Dec 4: Eric Steinberg: Topic "When things go Boom! Novae, Supernovae &
Their Remnants."

PAS is incorporated in the state of Arizona as a non-profit, scientific and educational 501(c)(3) organization. Our newsletter PAStimes is published monthly from September to May and distributed by US PS and the Internet. All Issues are available for download on our website www.pasaz.org
Ads for astronomy equipment are provided as a courtesy to sellers and buyers, and do not constitute any endorsement by PAS. All Photos by Don Boyd unless otherwise credited. All articles and photos are copyright their authors or PAStimes.

What's Up For September?

By Rod Sutter, PAS Past President

Planets

Name	Date	Rise	Set
Mercury	09-15-14	08:18	19:31
Venus	09-15-14	05:26	18:10
Mars	09-15-14	11:42	21:43
Jupiter	09-15-14	03:00	16:38
Saturn	09-15-14	10:34	21:14
Uranus	09-15-14	19:44	08:01
Neptune	09-15-14	17:40	04:54
Pluto	09-15-14	14:27	00:41

All Times Arizona Time

September 15 2014

Sunrise: 06:11

Sunset: 18:34



Q1: September 2



Full: September 8



Q3: September 15



New: September 23